1139 Angiographic Predictors in PTCA

Tuesday, March 31, 1998, 3:00 p.m.–5:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 3:00 p.m.–4:00 p.m.

1139-83 Occluded Arteries Should Be In an ACC/AHA Class by Themselves. An Analysis of Data From the Society for Cardiac Angiography and Interventions' (SCA&I) Registry

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41049 single vessel PTCAs were analyzed. Patients (Pts) with an occluded target artery had a higher incidence of acute MIs (30.5% vs. 3.0%), than Pts with patent target arteries ($p < 0.001$). The table ahows success percentages and complication rates in *unsuccessful* procedures, stratifying the lesions by ACC/AHA class (separating 100% occluded arteries) in Pts without an acute (<24 hrs.) MI.

No MI	Successful procedures	Unsuccessful emerg CABG	Unsuccessful death
Type A - patent	97.3%	20.2%	3.4%
Type B - patent	96.6%	32.4%	3.3%
Type C - patent	90.0%	26.5%	3.3%
Occluded artery	80.1%	5.9%	1.7%

Success rates for *patent* arteries in Pts with MIs were similar to non MIs, and was 91.2% for occluded arteries in Pts with acute MIs.

Conclusion: Patients undergoing PTCA of occluded arteries represent a heterogeneous group with a high percentage of acute MIs. For non-MI Pts, success rates for totally occluded arteries are lower than for patent arteries, but complication rates for unsuccessful procedures are substantially lower than for Pts with patent arteries.

The evidence suggests that PTCAs of occluded arteries are performed with different expectations and results than for patent arteries of any existing ACC/AHA class, and should be considered a separate class.

1139-103 Target Sites Escaped From High-Grade Restenosis After Percutaneous Transluminal Coronary Angioplasty: Do They Become Stable Plaque? – Angiographical Reevaluation of More Than One Year Interval

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Objective and Method: In order to investigate the long term outcome of PTCA target sites without high-grade restenosis (<70%) in major coronary arteries at F/U angiography, we performed second angiography with more than 1-year interval from the last F/U angiography and examined the relationship between target site progression and cardiac events.

Results: Of 968 target sites which met to the above criteria, 301 sites (31%) of 234 patients (mean age was 64 y.o, male 163) were reevaluated. The mean follow-up period was 1324 ± 803 (387~3929) days. The reasons for second angiography were 8 for acute myocardial infarction (AMI), 6 for unstable angina (UAP), 93 for new angina (NAP) and 194 for follow-up. Among them, original target site was responsible for two AMI: developed from (0% = 1, 60% = 1), for two UAP: developed from (0% = 1, 49% = 1) and for 15 for NAP: developed from (0% = 6, 25% = 4, 49% = 1, 63% = 3, 70% = 1). Thus 20 target sites (20/301 = 6.6%) were responsible for either AMI, UAP or NAP and 87 culprit lesions developed from non-target sites. Angiographical comparison of target sites revealed both progression and regression, and the incidence of progression to more than 99% stenosis were 10 out of 253 sites (4%) which escaped from high-grade restenosis with loss than 50% stenosis and 3 out of 48 (6.3%) sites which escaped with 50~70% stenosis. This difference was statistically insignificant.

Conclusion: We conclude that target sites once escaped from high-grade restenosis may become stable plaque and mid-grade restenosis (50~70%) is similarly stable like target sites with less than 50% stenosis.

1139-104 Long-term Analysis of Balloon Angioplasty and an Initial "stent-like" Result: The 1985–86 NHLBI PTCA Registry

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Background: Compared to balloon angioplasty (PTCA), coronary stenting optimizes angiographic outcome and reduces need for repeat revascularization. However, the long-term safety and efficacy of stent use is unknown.

Methods: Ten year outcome was compared between 225 successfully treated patients (pts) with, and 1764 successfully treated pts without, an initial "stent-like" (SL) result (≥1 lesion dilated to ≤10% stenosis) in the 1985–86 NHLBI PTCA Registry. Comparisons were also made among single and multi vessel disease pts.

Results: Ten year rates of death, myocardial infarction (MI), and repeat revascularization (via bypass surgery or PTCA) were similar between pts who did, or did not, achieve an initial SL result (22.3% vs. 22.2%, 17.6% vs. 17.9%, 53.4% vs. 53.5%). However, among pts with multi vessel disease, there was a trend for less bypass surgery during follow-up for pts who achieved an initial SL result (25.2% vs. 32.7%, $p = 0.09$), but higher repeat PTCA (53.8% vs. 42.7%, $p = 0.07$). These findings were unaffected after adjustment for differences in baseline characteristics between pts who did, or did not, achieve an initial SL result.

Conclusion: An initial SL result achieved via PTCA alone did not influence long-term risk of death, MI, or repeat revascularization. However, pts with multi vessel disease who achieved an initial SL result (vs. those without) were more likely to undergo repeat PTCA rather than bypass surgery when repeat revascularization was required.

1139-105 High Pressure Versus Larger Calibre to Achieve an Optimal Balloon Size in Coronary Angioplasty: Interim Results of an In Vitro Intravascular Ultrasound Study

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Introduction: Balloon calibre and pressure strategies are crucial to the outcome of coronary angioplasty but remain poorly defined. Optimal sizing of compliant balloons may be achieved using high pressure or larger calibres at nominal pressure. This study examined the effect of each strategy on luminal gain and degree of vessel disruption.

Methods: Twenty-one post-mortem coronary arteries were studied in a pulsatile flow system. Intravascular ultrasound (IVUS) imaging using 3.2F, 30 mHz transducers was performed to identify severe focal coronary stenoses (~70% by area). Optimal balloon size was determined from the minimum lumen area site (total vessel diameter × 0.8). Lesions were then randomised to inflation with larger calibre balloons at nominal pressure (group A) or smaller calibre balloons at high pressure (group B). Both strategies achieved a balloon: artery ratio of 1.1:1.0. Each lesion was dilated three times, each of sixty seconds duration. Repeat mechanised IVUS pullback (0.5 mm/sec) was performed after the procedure and analysed offline.

Results: Lesion characteristics were similar in each group. Similar luminal diameter (0.77 ± 0.35 mm vs 0.60 ± 0.34 mm, p = NS) and area (1.71 ± 0.77 mm^2 vs 1.68 ± 0.68 mm^2, p = NS) gains were achieved in groups A and B respectively. There were significantly more dissections in group B (14 ± 2 vs 7 ± 2, p < 0.0001) with more frequent medial disruption-type C and D morphology-(9 ± 1 vs 0 ± 1, p < 0.0001).

Conclusions: High pressure inflations resulted in increased deep vessel disruption and no difference in acute luminal gain compared to larger calibre balloons. These preliminary in vitro data suggest that accurate balloon sizing by IVUS can reduce the need for high pressure inflations and may, in the clinical setting, reduce abrupt vessel closure and neointimal proliferation resulting from deep vessel injury.

1139-106 Contrast Media Induced Profound Platelet Degranulation Does Not Increase Ex-Vivo Platelet Thrombus Formation

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Background: Controversial data from in vitro studies exist on the thrombogenic and anticoagulant potential of non-ionic (NI) compared to ionic (I) low osmolar contrast media (LOCM).

Methods: To assess the role of I (loxaglate) vs NI (loversol) LOCM on platelet activation and thrombus formation, we evaluated normal individuals in vitro (contrast: blood ratio 1:1, n = 10) and CAD patients ex vivo (before and after angiography, n = 7) using immunolabeling and flow cytometry to detect platelet activation (PA = percentage of positive platelets). Platelet-derived microparticles (PMP) have high procoagulant activity and were quantified by flow cytometry using monoclonal antibodies against GP IIIa (7H2, percentage of PMP per 10,000 platelets gated). The growth of platelet-rich thrombus was evaluated by perfusing severely injured arterial wall with human native blood for 5 min at shear rates of 1690/s in a well characterized perfusion chamber (Badimon). Thrombus area was analyzed by computer-assisted morphometry.

TUESDAY POSTER